

**Nutrient Management Plan
for the
Alexandria Campus
Northern Virginia Community College**

Prepared for:

**Northern Virginia Community College
Facilities Planning Division, Rm. 314B
8333 Little River Turnpike
Annandale, VA 22003**

Prepared By:

Paul W. Leeger/Certified Nutrient Management Planner - Certification No. 830

**EEE Consulting, Inc.
8525 Bell Creek Road
Mechanicsville, VA 23116**

Location Information	
Physical Address	5000 Dawes Ave
City State Zip	Alexandria, VA 22311
Coordinates	+38 50' 31.19"
NAD 83 Deg Min Sec	- 77 6' 47.84"
VAHU6 Watershed Code	PL25 – Potomac River-Fourmile Run
County	Alexandria City

Square Footage of Management Areas	
Total	9.27 acres (403,759 ft ²)
Area 1	9.27 acres (403,759 ft ²)


Plan Start Date	July 15, 2018
Plan End Date	July 15, 2021
Planner Signature	

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1.0 INTRODUCTION AND SITE DESCRIPTION

1.1 Introduction

This Nutrient Management Plan (NMP) is for the Alexandria Campus of the Northern Virginia Community College (NOVA) located in the northwestern corner of the City of Alexandria, Virginia, just south of Leesburg Pike and north of I-395 (Figure 1).

This NMP addresses only the nutrient management of turfgrass. Management of other vegetated areas containing trees, flowering ornamentals, small shrubs and groundcovers, is performed by each facility and their landscape contractor based on very site-specific conditions including but not limited to the type and status of vegetated areas, annual soil testing, and the occurrence of pests and weeds. This NMP is effective until July 15, 2021 or until major renovation or other changes to maintenance practices occur. This NMP includes revisions to add previously inactive turf areas to active nutrient management. This NMP should be used as a resource for planning the quantity and timing of turfgrass nutrient application based on sound agronomic practices.

1.2 Site Description

The 58-acre Alexandria Campus contains turfgrass in many areas including around campus buildings, along roadways and around and within parking lots. The Alexandria Campus contains one athletic field located at the northeastern end of the campus. All turf areas have been seeded with a tall fescue blend (mix of fine leaved tall fescue and Kentucky bluegrass) and are therefore categorized as cool season turf.

In general, turf conditions are fair to good. Turf in some areas is thin, with bermudagrass mixed in and appears to need topsoil and overseeding. There are a few small turf areas with limited groundcover, thin topsoil, steep slopes, and over-compacted soil. These problem areas, which are addressed in Section 3.2, are generally located in the parking lot located at the southwestern portion of the campus and further north along Dawes Avenue.

There is no irrigation at the Alexandria Campus.

1.3 Current and Future Turf Maintenance

All turf maintenance is performed by NOVA's landscaping contractor including mowing, herbicide, fertilizer and lime applications, as well as aeration and overseeding.

A landscaping maintenance contractor will be performing most turf management including all nutrient applications. It will be the responsibility of the Landscape Supervisor and the campus Facility Manager to ensure the management plan is followed.

2.0 SOIL SAMPLING AND ANALYSIS

Although most of the soils in the turf areas have been modified by cut and fill activities, the soils still retain most of the characteristics presented in the U.S. Department of Agriculture (USDA) soil survey, and may still be classified as sandy to clay loams.

Soil samples were collected on February 13, 2018 from five (5) different turfgrass areas across the campus and submitted for laboratory analysis including pH, buffer pH, phosphorus and potassium, and other soil properties. Figure 2 shows the locations of the soil sampling areas as well as environmental sensitive areas and Table 1 presents the laboratory results. Appendix A presents the soil laboratory data. No sampling was performed within wooded or landscaped areas.

Soil laboratory results were converted into nutrient management ratings based on the Virginia Nutrient Management Standards and Criteria (VNMS&C). Soil phosphorous levels ranged from M- to L-, and potassium concentrations ranged from M to H-. Soil pH ranged from 5.6 to 7.4 Standard Units (SU), with all but one sample having a pH above the target level of 6.2 for cool season turf.

3.0 NUTRIENT MANAGEMENT AREAS

Based on the soil test results, current turf conditions, the intensity of use, and overall visibility and aesthetic considerations, one Nutrient Management Area (NMA) at the Alexandria Campus has been established for this NMP. The number of nutrient management areas was kept to a minimum to facilitate effective management, protect water quality, and maintain healthy turf. Figure 3 shows the nutrient management areas and Figure 4 shows the liming areas. Table 2 presents the application schedule for the nutrient management and liming areas, discussed in greater detail in Section 3.1 below.

NMA 1 includes all soil sampling areas and contains approximately 9.27-acres of turf. As discussed in Section 3.2, some areas within NMA 1 should be temporarily removed from active nutrient management until an effective groundcover/turfgrass can be established.

3.1 Nutrient and Liming Applications

3.1.1 Nitrogen, Phosphorous and Potassium

Nitrogen, phosphorous (P₂O₅) and potassium (K₂O) are the three macronutrients essential for healthy turf and, along with lime applications, and are the central focus of the NMP. Phosphorous and potassium recommendations are based on the soil laboratory results. Nitrogen recommendations are based on the turfgrass needs, not soil test results, which vary based on the type of turfgrass (cool vs. warm season) and level of management (standard vs. intensive).

Recommended rates and timing of all three macronutrients are based on the VNMS&C. This NMP uses most restrictive application rate for each NMA based on individual sample results where multiple sampling areas are part of the same NMA.

The acceptable window for nitrogen application for cool season fescue turf at the Alexandria Campus is from February 27 until December 6. Although aggressive spring and summer nitrogen fertilization can result in lush, dark green foliage, this occurs at the expense of the turf root system. Turf with an inadequate root system will then struggle in the summer heat and moisture conditions. Additionally, too much nitrogen in spring and summer for cool season turf can result in leaching or runoff to nearby waterbodies. The bulk of nitrogen should be applied in monthly increments from September through November.

As phosphorous and potassium are not as mobile as nitrogen and generally reside in soil for longer periods of time, the application timing of these two macronutrients is not as critical as nitrogen. Incremental applications of these nutrients from September to November are recommended.

3.1.2 Lime and pH

Soil acidity is critical to plants because it affects the availability of nutrients in the soil and potential leaching of nutrients from the soil. Cool season fescue prefers a soil pH that is slightly acidic, at a level of approximately 6.2 Standard Units (SU). Periodic lime applications are necessary for many Virginia soils to correct low pH, add buffering capacity, to provide secondary nutrients calcium and magnesium as well as some micronutrients. Liming rates are based on the soil test pH and the buffer indices. Based on the 2018 soil samples, a single lime application of 35 pounds per 1,000 square feet is recommended for the athletic field, soil sampling area AL-5. No liming is recommended for the remainder of the soil sampling areas.

Liming recommendations are only for the first year following sampling. The soil should be tested for soil pH and Buffer pH in the late fall to winter each following year to determine if liming is necessary following the initial recommended liming.

3.2 Problem Turfgrass Areas and Temporarily Inactive Nutrient Management Areas

Turf in several areas across the campus appears thin, with bermudagrass mixed in and appears to need additions of topsoil and overseeding. Areas of ineffective groundcover should be temporarily removed from active nutrient management until corrective measures can be applied to improve the turfgrass or groundcover conditions.

Corrective action options vary by area but may include additional soil amendments (compost/topsoil), aeration or shallow tilling, and the use of mulch, turf mats and blankets. Alternative landscaping such as pavers, and other hardscape treatments may be the best alternative

for some areas. If turfgrass is the desired vegetative cover, the soil should be retested for soil and buffer pH and adjusted accordingly with limestone as part of corrective action. Once turfgrass is re-established the areas may be included in Nutrient Management Area 1 for nutrient recommendations.

3.3 Selection of Fertilizers

Specific fertilizers have not been selected as a part of this NMP to provide greater flexibility and cost savings. The landscape contractor has the option to select either commonly used fertilizer blends that they may already have in stock or are readily available, or they can use custom blends, a common practice in the commercial landscaping industry. Slow release nitrogen containing fertilizers are recommended. This NMP will require revision should the landscape contractor and the campus Facility Manager decide to use animal manures or Class B biosolids (not of exceptional quality).

Provided the maximum rate of nitrogen per application and the total annual rates of all three nutrients are not exceeded as detailed in Table 2, the landscape contractor may use their discretion with the exact ratio of nutrients applied per application.

3.4 Pre- and Post-Emergent Herbicides

Weed control is a necessary requirement for healthy turf and has been implemented in the past at the Alexandria Campus. In the previous NMP period, pre and post emergent herbicides containing nitrogen fertilizers were applied in spring and early summer months for the campus grounds. As presented in Section 3.1.1, only one application of slow release nitrogen is recommended in the late spring for NMA 1. Therefore, additional straight application of herbicides without nitrogen additives may be required. The Virginia Cooperative Extension (VCE) Publication 430-532 (http://pubs.ext.vt.edu/430/430-532/430-532_pdf.pdf) presents a more detailed discussion of pre and post emergent herbicides for cool season turf.

3.5 Precautions for Fertilizer Applications

General precautions for fertilizer application include:

- Avoid applying fertilizers on steep slopes 48-hours prior to a rain event.
- Do not apply fertilizers to frozen or snow-covered ground, nor should they ever be used as ice melt.
- Avoid/minimize application of fertilizers to impervious areas such as parking lots, roads, and sidewalks, and within 25 feet of environmentally sensitive areas and stormwater collection/management facilities.

- Remove any granular materials that land on impervious surfaces by sweeping and collecting, and either put the collected material back in the bag, or spread it onto the turf.

4.0 ENVIRONMENTALLY SENSITIVE AREAS AND RECOMMENDED BUFFERS

Four environmentally sensitive areas including stormwater management facilities were identified on the Alexandria Campus as shown on Figures 2 through 4:

- One detention basin is in the wooded area adjacent to Beauregard Street.
- A bio-retention basin (rain garden) is located north of Building AFA in a median.
- Two additional bio-retention basins (rain gardens) are located south and southeast of Building AA, between buildings AA and AFA

A no-fertilizer/pesticide application buffer area of at least 25 feet and preferably 50 feet should be established around these sensitive areas. Where practicable, native vegetation may be an alternative to turf in the buffer areas.

It is noted that identification of sensitive natural resources areas such as wetlands and streams is based on the publicly available National Hydrologic Dataset and the U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory Maps. Field mapping of other wetlands and streams that may exist on the campus was outside the scope of this NMP.

5.0 OTHER TURF MANAGEMENT CONSIDERATIONS

Aeration - Extensive core cultivation/aeration in the late summer to early fall is recommended for the Alexandria campus. Core aeration is very disruptive to surface smoothness, but it is the best way to relieve the physical effects of soil compaction and increase soil oxygen levels.

Grass Seed Type – VCE 2014-2015 - Virginia Turfgrass Variety Recommendations <https://www.sites.ext.vt.edu/newsletter-archive/turfgrass/index.html> - (most recent year) should be referenced when selecting seed mix for over-seeding. The type should be suitable to environmental conditions of the Northern Virginia Transition zone. A general recommendation for the Alexandria Campus is 90% Tall Fescue possibly blended with 10% Kentucky Bluegrass for turf in primarily sunny locations. Fine fescue blends may be more appropriate for shadier turf areas.

Iron - Iron applications (particularly foliar applications) may periodically be used for enhanced greening as an alternative to nitrogen. These applications are most beneficial if applied in late spring through summer for cool season grasses and in late summer/fall applications for warm-season grasses. Since iron is a micronutrient, its application levels are very low. The color response is short-lived (typically two to three weeks) because the iron-induced color response in the leaves is removed by mowing.

Returning and Management of Grass Clippings - The recycling of grass clippings on turf should be encouraged as an effective means of recycling nitrogen, phosphorus, and potassium. Where aesthetics allow, all clippings from mowing events should be returned to the turf rather than discharging them onto sidewalks or streets. Clippings should not be blown onto impervious surfaces or surface waters, dumped down stormwater drains, or piled outside where rainwater will leach out the nutrients creating the potential for nutrient loss to the environment

Spreader Equipment Calibration - Spreader equipment calibration is critical to NMP implementation. The landscape contractor should supply equipment calibration records to the campus Facility Manager on a routine basis.

6.0 RECORDKEEPING

Proper NMP implementation requires diligent record keeping of fertilizer, lime and herbicide applications, and turfgrass conditions. Important information to retain with the plan includes soil tests reports; spreader settings; calibration results, dates of fertilizer application and rates applied; seeding or renovation; and unusual stresses caused by disease, drought, and pests. This information will also provide the background needed for future plan revisions.

7.0 REFERENCES

Nutrient Management Training and Certification Regulations 4VAC50-85 (effective date November 23, 2014)

Virginia Nutrient Management Standards and Criteria (Revised July 2014):
<http://www.dcr.virginia.gov/documents/StandardsandCriteria.pdf>

Spring and Summer Lawn Management Considerations for Cool-Season Turfgrasses 430-532:
http://pubs.ext.vt.edu/430/430-532/430-532_pdf.pdf

Winter Management and Recovery Tips to Optimize Athletic Field Safety and Performance for Spring Sports, VCE Publication 430-408: (http://pubs.ext.vt.edu/430/430-408/430-408_pdf.pdf)

Virginia Cooperative Extension Publication 2014-2015 - Virginia Turfgrass Variety Recommendations http://pubs.ext.vt.edu/CSES/CSES-17/CSES-17_pdf.pdf

TABLES

Table 1 - Soil Test Summary

Site:		Alexandria Campus - NOVA							
Testing Lab:		Waypoint Analytical (Formerly A&L Eastern Laboratories)							
Sample Date:		02/13/2018							
Soil Sampling Area ID	Square Feet	Soil pH (SU)	Buffer pH (SU)	P (Mehlich I) ppm	P (H/M/L)	K (Mehlich I) ppm	K (H/M/L)	Soil description	Turf Species
AL-1	165,662	6.5	DNC*	1	L-	85	M+	Dark Brown, Sandy Clay Loam	Cool season, fescue
AL-2	41,761	6.6	DNC*	9	M-	94	H-	Dark Brown, Sandy Clay Loam	Cool season, fescue
AL-3	19,565	7.4	DNC*	3	L	102	H-	Dark Brown, Sandy Clay Loam	Cool season, fescue
AL-4	131,607	7.2	DNC*	0	L-	101	H-	Dark Brown, Sandy Clay Loam	Cool season, fescue
AL-5	45,164	5.6	6.78	1	L-	72	M	Dark Brown, Sandy Clay Loam	Cool season, fescue

Notes: SU = Standard Units; ppm = parts per million; P and K ratings are from Virginia Nutrient Management Standards & Criteria.
DNC* = Buffer pH did not compute because the pH was above 6.2, according to Waypoint Analytical personnel.

Table 2 – Nutrient Application Worksheet – Nutrient Management Area 1Site: **Alexandria Campus – NOVA**Begins: **7/15/2018** Expires: **7/15/2021**Nutrient Management Area: **1**Square Feet: **403,759**Landscape Plants: **Cool Season Turf (Fescue)**

Annual Nutrient Needs (lbs/1000 ft²)¹	Application Month/Day^{1,2}	Amendment Material Notes	% Slow Release N	Total N (lbs/1000 ft²)	Total P2O5 (lbs/1000 ft²)	Total K2O (lbs/1000 ft²)	Lime Recommendation (lbs/1000 ft²)³
2.8*-1.5*-0.75*	April 15-May 15	N- Fertilize & Lime	50% or greater	0.5	0	0	35
	Sept 1	Aerate, Overseed & Fertilize	50% or greater	0.9	0.5	0.25	
	Oct 1	Fertilize	50% or greater	0.9	0.5	0.25	
	Nov 1	Fertilize	50% or greater	0.5	0.5	0.25	
	Totals:			2.8	1.5	0.75	

Notes:

*Up to 2 lbs of P2O5 per 1000 ft² is allowed per soil test results but only 1.5lbs of P2O5 per 1000 ft² is recommended in this plan. Up to 3.5 lbs of nitrogen per 1000 ft² is allowed for soil sampling areas AL-1 through AL-4 per the VNMS&C, but only 2.8 lbs per 1000 ft² is recommended in this plan for consistency. Up to 1 lb of K2O per 1000 ft² is allowed per soil test results but only 0.75lbs of K2O per 1000 ft² is recommended in this plan.

1. Fertilizer recommendations are flexible provided the following conditions are met: a) no more than 0.7 pounds of Water Soluble N per 1000 ft² is applied within a 30-day period; b) no more than 0.9 pounds of Total N (per 1000 ft²) may be applied within a 30-day period; and c) Total annual fertilizer amounts for each nutrient should not exceed the Annual Nutrient Needs listed in column 1.

2. The month and day designations are a general guideline. Apply as close to the month as possible, using the day designation to determine the interval between applications.

3. A single lime application is recommended for soil sampling area AL-5 in the amount of 35 lbs per 1000 ft². Lime applications are for the first year after sampling only. Liming for following years should be based on additional soil pH and Buffer pH testing.

4. Do not apply inorganic fertilizers on frozen or snow-covered ground, or on denuded areas. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass – covered areas. Do not use fertilizers as ice melt.

5. Use a drop spreader for application of inorganic fertilizers on turf areas less than 10 feet wide or on slopes greater than 2%.

6. Apply pre and or post emergent herbicides as needed, but do not use fertilizer containing herbicide prior to April 15th and conditions must be met in Note 1.










FIGURES

Figure 1: Alexandria Campus–Project Location



Date: March, 2018
 Author: KMM
 Source: 2013 VBMP Imagery.
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet

Figure 2: Alexandria Campus-Soil Sampling Areas

-  Northern Virginia Community College (NVCC)
-  Environmental Sensitive Area
-  National Wetlands Index (NWI)
-  National Hydrography Dataset (NHD)
- Soil Sampling Areas**
 -  AL-1
 -  AL-2
 -  AL-3
 -  AL-4
 -  AL-5



Date: March, 2018
 Author: KMM
 Source: 2013 VBMP Imagery.
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Alexandria Campus
 Figure 2: Soil Sampling Areas
 NVCC NMP

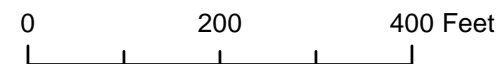


Figure 3: Alexandria Campus-Nutrient Management Areas

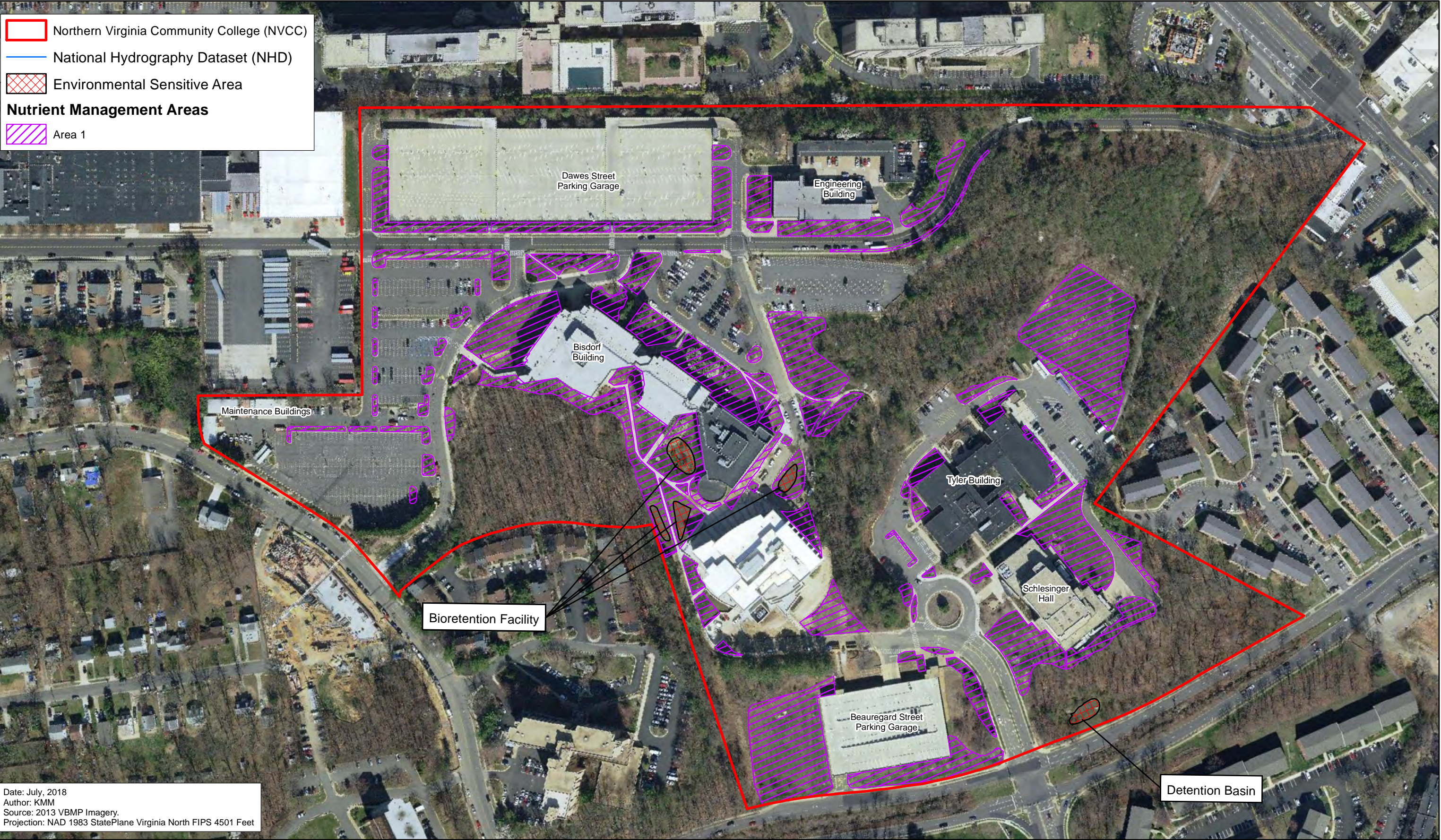
Northern Virginia Community College (NVCC)

National Hydrography Dataset (NHD)

Environmental Sensitive Area

Nutrient Management Areas

Area 1



Date: July, 2018
Author: KMM
Source: 2013 VBMP Imagery.
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Alexandria Campus
Figure 3: Nutrient Management Areas
NVCC NMP

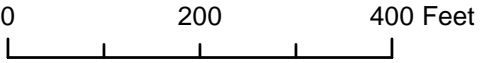


Figure 4: Alexandria Campus-Liming Areas

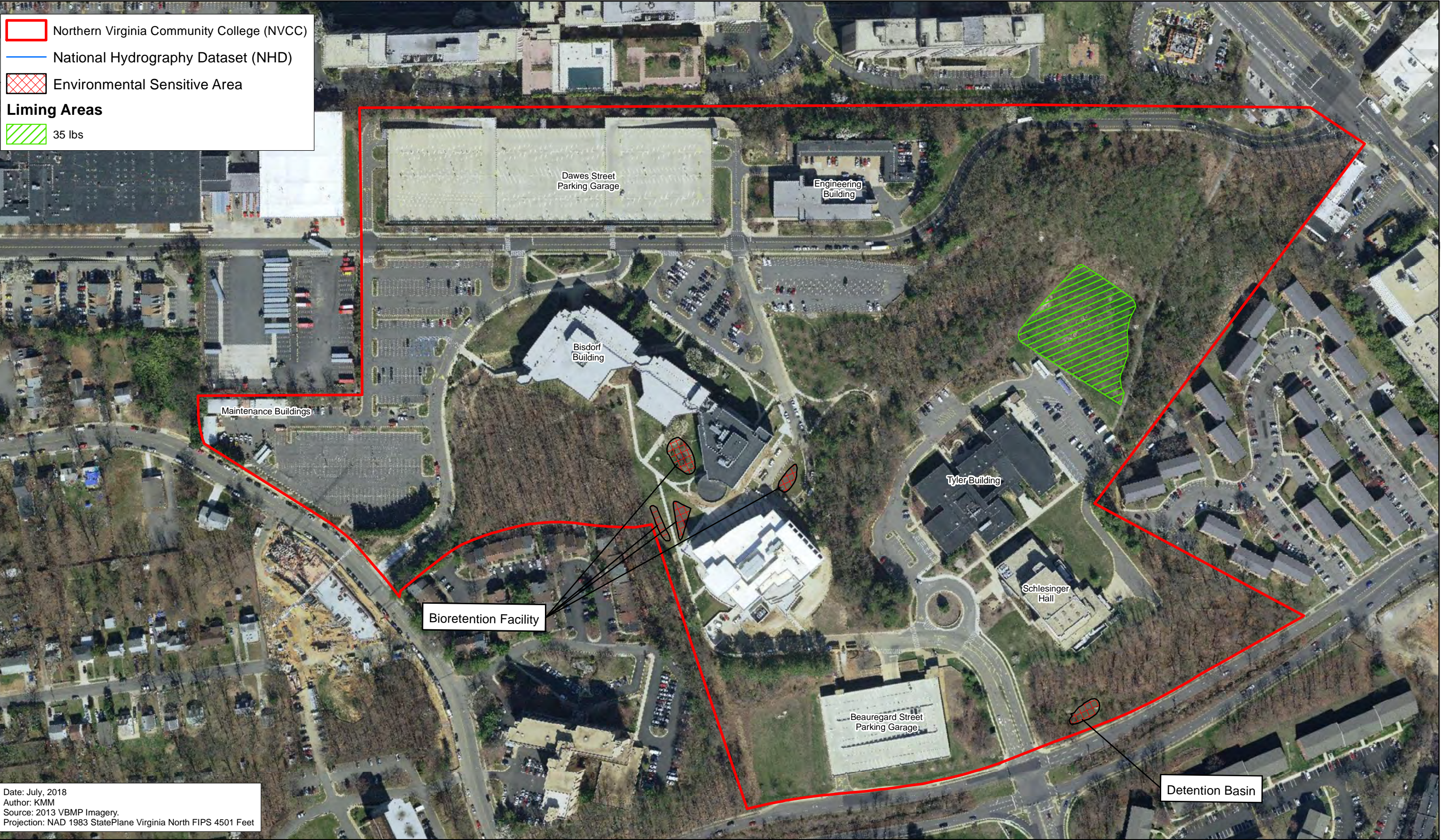
Northern Virginia Community College (NVCC)

National Hydrography Dataset (NHD)

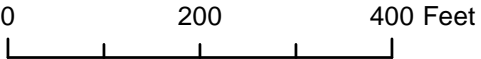
Environmental Sensitive Area

Liming Areas

35 lbs



Date: July, 2018
 Author: KMM
 Source: 2013 VBMP Imagery.
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



APPENDICES

Appendix A

Laboratory Soil Test Results

Report Number: 18-046-0755

Account Number: 78934



7621 Whitepine Road, Richmond, VA 23237
Main 804-743-9401 ° Fax 804-271-6446
www.waypointanalytical.com

Send To: EEE Consulting Inc
201 Church Street
Suite C
Blacksburg VA 24060

"Every acre...Every year."™

Grower: NVCC Alexandria
5000 Dawes Ave

SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 02/15/2018

Date Of Analysis: 02/16/2018

Date Of Report: 02/16/2018

Sample ID Field ID	Lab Number	OM	W/V	ENR	Phosphorus						Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C		
		% Rate	Soil Class	lbs/A	M3 ppm	Rate	ppm	Rate	ppm	Rate	K ppm	Rate	Mg ppm	Rate	Ca ppm	Rate	Na ppm	Rate	Soil pH	Buffer Index
AI-1	07544	4.9 M		139	10	VL				120	M	182	H	815	M		6.5		0.5	6.4
AI-2	07545	4.4 M		125	26	L				132	H	200	H	1282	H		6.6		0.5	8.9
AI-3	07546	3.8 M		110	14	L				143	M	214	H	1747	H		7.4		0.0	10.9
AI-4	07547	3.8 M		111	8	VL				142	M	370	VH	1446	M		7.2		0.0	10.7
AI-5	07548	3.8 M		117	9	VL				101	M	156	H	668	M		5.6	6.78	1.5	6.4

Sample ID Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO ₃ N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
AI-1	4.8	23.7	63.7		7.8										
AI-2	3.8	18.7	72.0		5.6										
AI-3	3.4	16.4	80.1		0.0										
AI-4	3.4	28.8	67.6		0.0										
AI-5	4.0	20.3	52.2		23.4										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: *Paucic McGroary*

Paucic McGroary

Report Number: 18-046-0755

Account Number: 78934



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Suite C
Blacksburg VA 24060

Grower: NVCC Alexandria
5000 Dawes Ave

Date Received: 02/15/2018

Date Of Report: 02/16/2018

SOIL FERTILITY RECOMMENDATIONS

Sample ID Field ID	Intended Crop	Yield Goal	Lime Tons/A	Nitrogen N lb/A	Phosphate P ₂ O ₅ lb/A	Potash K ₂ O lb/A	Magnesium Mg lb/A	Sulfur S lb/A	Zinc Zn lb/A	Manganese Mn lb/A	Iron Fe lb/A	Copper Cu lb/A	Boron B lb/A
AI-1	Lawn	0	0.0	3.5	3.5	1.0	0						
AI-2	Lawn	0	0.0	3.5	2.0	0	0						
AI-3	Lawn	0	0.0	3.5	3.0	0	0						
AI-4	Lawn	0	0.0	3.5	4.0	0	0						
AI-5	Lawn	0	0.0	3.5	4.0	1.0	0						

Comments:

"The recommendations are based on research data and experience, but NO GUARANTEE or WARRANTY expressed or implied, concerning crop performance is made."

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Pauric McGroary

Report Number: 18-046-0755

Account Number: 78934



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Suite C
Blacksburg VA 24060

Grower: NVCC Alexandria
5000 Dawes Ave

Sample(s) : AI-2,AI-3,AI-4,AI-5 Crop: Lawn

For a more in depth explanation of the soil test and recommendations, go to our website www.aleastern.com and select the "Lawn and Garden" tab at the top of home page. Under the "How to Understand a Soil Test Report" header you will find the link to the article "Soil Test Report & Fertilizer Recommendation Explained".

The amount of fertilizer recommended on the first page is the total amount needed for the entire growing season. Split into 3-4 applications to keep the lawn green and prevent fertilizer loss. You should not apply more than 0.7 lbs of soluble nitrogen per 1000 square feet in a 30 day period. Or more than 0.9 lbs of nitrogen per 1000 square feet if you are using a slow or controlled release product in a 30 day period. Custom blend is best to meet exactly the requirement, if this is impossible, the above specific fertilizer application is a general guideline, if the specified grades can not be found, replace with fertilizer having similar N:P:K ratio. The best time to apply fertilizer for cool season grass (bluegrass, fescue, ryegrass) is in the Fall when the grass is growing. For Mid-Atlantic region the time is from late August to November. For Northeast region the time is from mid August to October. Fall application should start as soon as the day time high temperature is below 80-85F, apply with the interval of one month. If you start application late in the Fall and do not finish all three applications, repeat the same applications in the Fall of next year. Spring application is recommended when exceptional fertilizer loss due to heavy spring rain leaching and the grasses look pale green. Spring application can start as soon as the grass starts to grow in April. In the case of exceptional warm spring, the application can be made earlier.

Sample(s) : AI-3 Crop: Lawn

To reduce soil pH apply 2.5 pounds of elemental sulfur per 1000 square feet for every 0.1 of pH unit above 7.2. For example, a soil pH of 7.4 requires 5 pounds of elemental sulfur (0.2 * 2.5). Do not apply more than 5 lbs per 1000 square feet per application or more than 10 lbs of elemental sulfur per 1000 square feet per year.

Timing between applications should be minimum of 3 months. Warm temperature and moist soil are needed for sulfur to reduce soil pH. If sulfur is applied in winter or under drought conditions, it will take longer for the the soil pH to be lowered.

Sample(s) : AI-3,AI-4 Crop: Lawn

Use ammonium sulfate as all or portion of the N requirement to reduce pH.

Sample(s) : AI-5 Crop: Lawn

Apply the amount of lime recommended in first page to raise pH

"The recommendations are based on research data and experience, but NO GUARANTEE or WARRANTY expressed or implied, concerning crop performance is made."

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Pauric McGroary